969953

PRC Environmental Management, Inc.
233 North Michigan Avenue
Suite 1621
Chicago, IL 60601
312-856-8700
Fax 312-938-0118

PRC

PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

FANSTEEL ESCAST
ADDISON, ILLINOIS
ILD 000 672 139

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

Work Assignment No.	:	R05032
EPA Region	:	5
Site No.	:	ILD 000 672 139
Date Prepared	:	February 15, 1994
Contract No.	:	68-W9-0006
PRC No.	:	309-R05032IL1C
Prepared by	:	PRC Environmental Management, Inc. (Judith Wagner)
Contractor Project Manager	:	Shin Ahn
Telephone No.	:	(312) 856-8700
EPA Work Assignment Manager	:	Kevin Pierard
Telephone No.	:	(312) 886-4448

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

HRE-8J

November 9, 1993

Mr. Fred Dix
Fansteel - Escast
21 Church Street
Addison, IL 60101

Re: Visual Site Inspection
Fansteel - Escast
Addison, IL
ILD 000 672 139

Dear Mr. Dix:

The United States Environmental Protection Agency (U.S. EPA) Region V will conduct a Preliminary Assessment and a Visual Site Inspection (PA/VSI) at the referenced facility. This inspection is conducted pursuant to the Resource Conservation and Recovery Act, as amended (RCRA) Section 3007 and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) Section 104(e). The referenced facility has generated, treated, stored, or disposed of hazardous waste subject to RCRA. The PA/VSI requires identification and systematic review of all solid waste streams at the facility. The objective of the PA/VSI is to determine whether or not releases of hazardous wastes or hazardous constituents have occurred or are occurring at the facility which may require further investigation. This analysis will also provide information to establish priorities for addressing any confirmed releases.

The visual site inspection of your facility is to verify the location of all solid waste management units (SWMUs) and areas of concern (AOCs) and to make a cursory determination of their condition by visual observation. The definitions of SWMUs and AOCs are included in Attachment I. The VSI supplements and updates data gathered during a preliminary file review. During this site inspection, no samples will be taken. A sampling visit to ascertain if releases of hazardous waste or constituents have occurred may be required at a later date.

Assistance of some of your personnel may be required in reviewing solid waste flow(s) or previous disposal practices. The site inspection is to provide a technical understanding of the present and past waste flows and handling, treatment, storage, and disposal practices. Photographs of the facility are necessary to document the condition of the units at the facility and the waste management practices used.

The VSI has been scheduled for November 19, 1993, at 9:30 a.m. The inspection team will consist of Judith Wagner and David Berestka of PRC Environmental Management, Inc., a contractor for the U.S. EPA. Representatives of the Illinois Environmental Protection Agency (IEPA) may also be present. Your cooperation in admitting and assisting them while on site is appreciated.

The U.S. EPA recommends that personnel who are familiar with present and past manufacturing and waste management activities be available during the VSI. Access to any relevant maps, diagrams, hydrogeologic reports, environmental assessment reports, sampling data sheets, environmental permits (air, NPDES), manifests and/or correspondence is also necessary, as such information is needed to complete the PA/VSI.

If you have any questions, please contact me at (312) 886-4448 or Francene Harris at (312) 886-2884. A copy of the Preliminary Assessment/Visual Site Inspection Report, excluding the conclusions and Executive Summary portion will be sent when the report is available.

Sincerely yours,

Francine D. Harris

Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section

Enclosure

cc: Larry Eastep, IEPA Springfield
Clifford Gould, IEPA Maywood

CONTENTS

FIGURES

TABLES

EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC), performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Fansteel-Escast (Fansteel) facility in Addison, DuPage County, Illinois. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified.

The Fansteel facility manufactures small metal parts using an investment casting process. The facility generates and manages the following hazardous waste streams: spent solvent (D001, F002, and F003); waste petroleum naphtha (D001, D018, and D039); and, in the past, a waste freon and acetone mixture (F001). The facility generates and manages the following nonhazardous waste streams: spent hydrochloric acid and water; used wax; broken molds; caustic sludge; baghouse dust; metal filings and scrap; waste oil; soil cuttings; slag; wastewater; and alkaline effluent.

The facility has operated at its current location since 1949. The facility occupies 3.5 acres in a mixed-use area and employs about 80 people. Operations at the Fansteel facility began in 1949 under Electronicast. Fansteel has owned and operated the facility since 1985.

The facility's current regulatory status is that of a large-quantity generator of hazardous waste. Escast, Inc. (the name of the facility in 1980), submitted a Notification of Hazardous Waste Activity form indicating generation of corrosive (D002) waste. A RCRA Part A permit application was not found in the facility's file. Subsequent notifications have not been submitted to reflect changes in ownership or waste streams. Fansteel RCRA-closed the Former Surface Impoundment (SWMU 7) under the guidance of the Illinois Environmental Protection Agency (IEPA) when 1,1,1-trichloroethane (TCA) contamination was found in the unit. Groundwater monitoring continues to be conducted under the direction of IEPA Division of Land Pollution Control (DLPC) for SWMU 7 and the Landfill (SWMU 8). Remediation of contaminated material in SWMU 8 is also being investigated under the direction of IEPA.

The PA/VSI identified the following eleven SWMUs and one AOC at the facility:

Solid Waste Management Units

1. Waste Storage Area
2. Wax Container Accumulation Area (CAA)
3. Nonhazardous Waste Accumulation Areas
4. Dumpster
5. Baghouses
6. Spent Acid CAA
7. Former Surface Impoundment (SI)
8. Landfill
9. Temporary Storage Tanks
10. Former Hazardous Waste CAA
11. Neutralization Sump

Area of Concern

1. Investment Department

The potential for release to groundwater is low for all SWMUs and the AOC except SWMUs 1, 7, and 8. SWMU 1 has a moderate potential for release. SWMUs 7 and 8 have documented releases. Releases of volatile organic compounds (VOC), primarily TCA and 1,1-dichloroethane (DCA), have been documented in the groundwater from the Former SI (SWMU 7) and the Landfill (SWMU 8). Relatively consistent concentrations of DCA (86 to 144 micrograms per liter [μg/L]) and TCA (6.9 to 25 μg/L) were present in a monitoring well near the center of SWMU 8 and 50 feet east of SWMU 7. The Waste Storage Area (SWMU 1) manages hazardous wastes in liquid form which could enter the soil and groundwater through cracks in the asphalt if they are spilled. The SWMUs with low potential for release manage nonhazardous wastes, are located indoors, or no longer exist. Groundwater in the area has not been routinely used since March 1991. The Village of Addison maintains eight municipal drinking water wells for emergency use, one of which is 1,500 feet downgradient of the facility. Private wells within village limits were abandoned or capped by 1992.

The potential for release to surface water is low for all SWMUs and the AOC, except SWMUs 1, 7, and 11. SWMUs 1 and 11 have a moderate potential for release. SWMU 7 has a documented release. SWMU 1 has a storm sewer drain located in the center of it. The storm sewer discharges untreated water to Salt Creek, which is 0.5 mile from the facility. Before 1984, wastewater from SWMU 7 was discharged to Salt Creek via storm sewers. Wastewater in SWMU 7 contained 108 parts per billion TCA when it was sampled in 1984. SWMU 11 is regulated under an operating

permit; the facility has a history of compliance problems regarding discharges which may have been from SWMU 11. Effluent from the facility is now discharged to the sanitary sewer system under a permit issued by the Village of Addison. Three sensitive environments are located within 0.5 mile of the facility. All are property of the Forest Preserve District of DuPage County.

The potential for release to air is moderate for SWMU 7 and AOC 1 and low for all other SWMUs. SWMU 7 has a moderate potential for past release because volatile TCA was discharged to this unit and may have been emitted into the air. PRC noted a heavy solvent odor during inspection of the Investment Department (AOC 1). This area is not included in the facility's operating air permit. Other SWMUs have a low potential because they manage nonhazardous waste, are maintained in good condition, or are included in the operating air permit. The nearest residence is located across the street on the west side of the facility.

The potential for release to on-site soils is high for SWMU 1. Releases to on-site soil have been documented for SWMUs 7 and 8. A closure plan for SWMU 7 required the removal of soil containing TCA at a concentration greater than 50 parts per million. Six inches of TCA-contaminated soil was removed from SWMU 7 to satisfy the closure requirements. VOC concentrations found in discolored natural silty clay below fill material in SWMU 8 ranged from 1.5 to 15.6 milligrams per kilogram. SWMU 1, which has heavily cracked asphalt, manages hazardous waste and caustic sludge which could be released to on-site soils if they are spilled. Access to the facility is limited by an 8-foot perimeter fence. However, PRC noted that in the past, this fence was cut and scrap metal managed in SWMU 1 was stolen.

PRC recommends that hazardous wastes managed in SWMU 1 have secondary containment which would adequately hold spills of liquid waste, although this is not a RCRA requirement. PRC bases this recommendation on its observations and on the numerous compliance inspections which have noted poor housekeeping practices in SWMU 1. Caustic sludge, which is not regulated as a hazardous waste, but may be characteristic for corrosivity, should be managed on site as a hazardous waste.

PRC also recommends that IEPA DLPC continue to oversee ongoing groundwater monitoring of SWMUs 7 and 8 and the remediation of SWMU 8. Contaminated fill material in SWMU 8, which

extends under SWMU 1 and off of the facility property, should be included in the investigation and remediation of SWMU 8. PRC recommends that IEPA continue to monitor the facility's compliance with water and operating air permits for SWMU 11 and AOC 1.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. R05032 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has usually exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading or unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release of hazardous waste or constituents to the environment has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where a strong possibility exists that such a release might occur in the future.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff; inspecting the entire facility to identify all SWMUs and AOCs; photographing all visible SWMUs; identifying evidence of releases; making a preliminary selection of potential sampling parameters and locations, if needed; and obtaining additional information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the Fansteel Escast (Fansteel) facility (EPA Identification No. ILD 000 672 139) in Addison, DuPage County, Illinois. The PA was completed

on November 10, 1993. PRC gathered and reviewed information from the Illinois Environmental Protection Agency (IEPA), United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), and from EPA Region 5 RCRA files. The VSI was conducted on November 19, 1993. It included interviews with facility representatives and a walk-through inspection of the facility. PRC identified 11 SWMUs and 1 AOC at the facility.

The VSI is summarized and 20 inspection photographs are included in Appendix A. The photographs have been renumbered; thus, their numbers differ from the photograph numbers in the VSI field notes which are included in Appendix B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location; past and present operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors.

2.1 FACILITY LOCATION

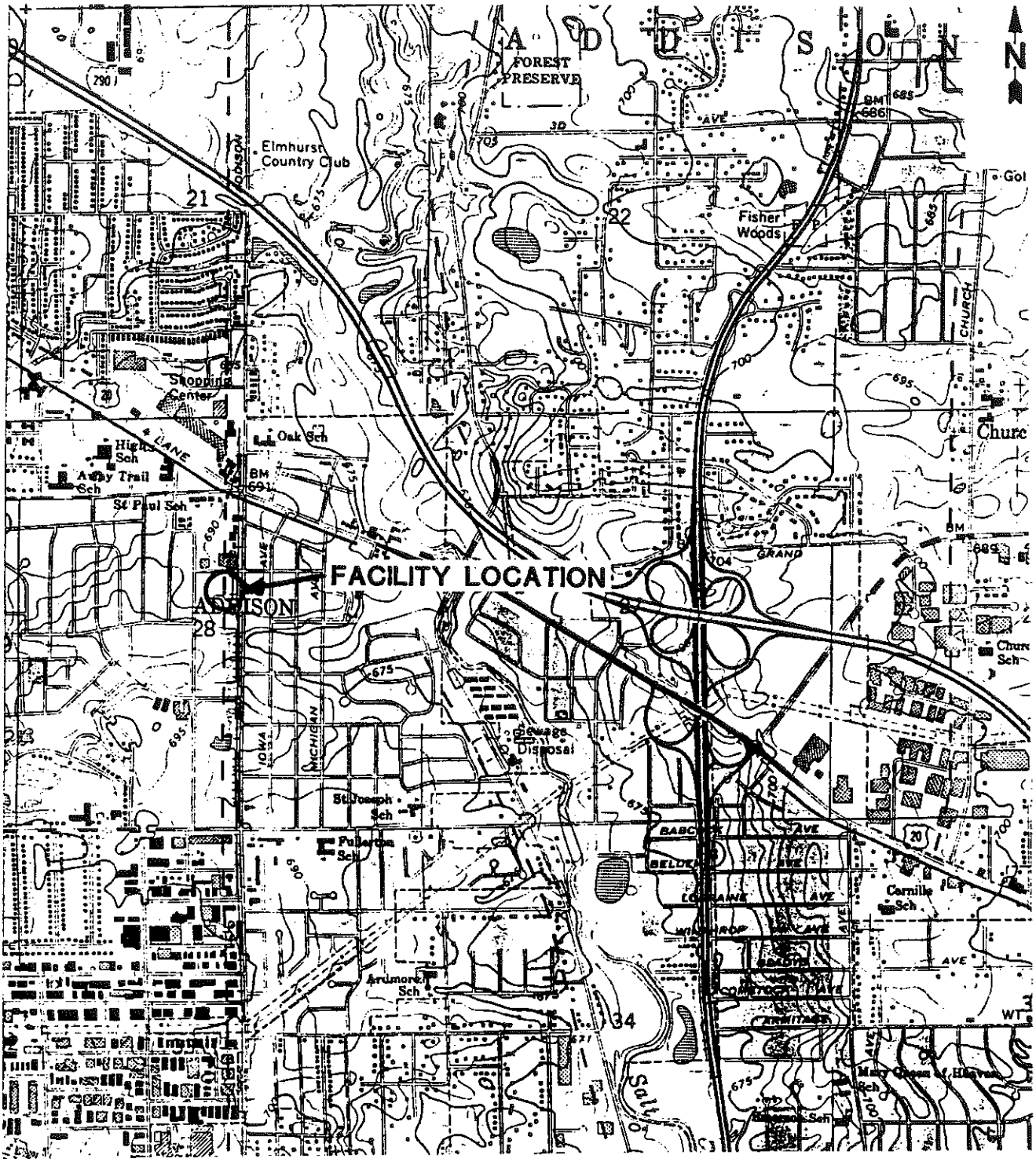
The Fansteel facility is located at 21 North Church Street in Addison, DuPage County, Illinois. Figure 1 shows the location of the facility in relation to the surrounding topographic features (latitude 41°55'40" N and longitude 87°59'30" W) (EPA 1984). The facility occupies 3.5 acres in a mixed-use area.

The facility is bordered on the north by a vacant industrial building, on the west by residences, on the south by a municipal water retention pond, and on the east by a vacant wooded railroad right-of-way.

2.2 FACILITY OPERATIONS

Fansteel manufactures small metal parts, averaging less than one-half a pound in size, by using an investment casting process. The parts are used in the automotive and defense industries. The investment casting process uses multiple wax replicas of the part which are attached to runner bars, forming clusters. The clusters are dipped in a series of sands and alcohol-based liquids, which form a slurry. The slurry-coated clusters are air-dried, and are then placed in an autoclave, where the wax melts and is removed, leaving behind a mold.

Next, the molds are fired, and become ceramic. When the firing is complete, the molds are removed from the furnace and are immediately filled with molten steel. After the mold and the steel cool, the ceramic mold is chemically removed in a Kolene machine which uses a sodium hydroxide solution to dissolve the ceramic material from parts which are immersed into the solution. Each mold is used only once. Each steel part is removed from the runner bar and is finished. This process has remained essentially the same since operations began at the facility.



SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE 1"=2,000'

QUADRANGLE LOCATION

SOURCE: MODIFIED FROM USGS, ELMHURST QUADRANGLE, 1980

FANSTEEL ESCAST
ADDISION, ILLINOIS

FIGURE 1
FACILITY LOCATION

ENVIRONMENTAL MANAGEMENT, INC.

The facility primarily uses low carbon steel and stainless steel. Before 1986, some products contained beryllium. The facility cleans wax clusters with 1,1,1-trichloroethane (TCA), isopropyl alcohol, and methylene chloride. In the past, a mixture of freon and acetone was used. Containers of these raw materials are stored in the investment department. Ethyl silicate and isopropyl alcohol are stored in underground storage tanks (UST). One inactive and three active USTs are located on site and are discussed in Section 2.5. Other raw materials are stored near the department in which they are used.

The facility began operations in 1949 under Electronicast. Ownership changed several times before Fansteel became the owner and operator. Former owners and operators include Estronics, Inc., Esmark, Inc., and Beatrice, Inc. Fansteel has operated at the facility since 1985 and employs about 80 people.

The facility consists of one 40000-square-foot building with two parking lots. A Landfill (SWMU 8) and a Former Surface Impoundment (SI) (SWMU 7) are located on the east side of the facility. Before the facility was constructed, the property was undeveloped.

Solid wastes generated from facility operations and the SWMUs where they are managed are discussed in detail in Section 2.3.

2.3 WASTE GENERATION AND MANAGEMENT

This section describes waste generation and management at the Fansteel facility. The facility's SWMUs are identified in Table 1. The facility layout, including SWMUs and AOCs, is shown in Figure 2. The facility's waste streams are summarized in Table 2.

Hazardous wastes currently generated at the facility include spent solvent (D001, F002, and F003), waste petroleum naphtha (D001, D018, and D039), and, in the past, a mixture of waste freon and acetone (F001). These wastes are discussed below.

Spent solvent (D001, F002, and F003) contains 1,1,1-TCA, isopropyl alcohol, and methylene chloride. The solvent mixture is used to etch and degrease wax clusters before coating. This hazardous waste is managed in 55-gallon drums in a designated section of the Waste Storage Area

TABLE 1

SOLID WASTE MANAGEMENT UNITS

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit[a]	Status
1	Waste Storage Area	No	Active; manages various nonhazardous wastes and hazardous wastes on a less-than-90-day basis
2	Wax Container Accumulation Area (CAA)	No	Active; manages nonhazardous used wax
3	Nonhazardous Waste Accumulation Areas	No	Active; manages nonhazardous metal filings, broken molds, caustic sludge, scrap, and slag
4	Dumpster	No	Active; manages general refuse and broken molds
5	Baghouses	No	Active; manages nonhazardous baghouse dust
6	Spent Acid CAA	No	Active; manages nonhazardous waste on a less-than-90-day basis
7	Former Surface Impoundment (SI)	Yes	Inactive; RCRA-closure approved in 1986 with on-going groundwater monitoring
8	Landfill	No	Inactive; currently under investigation
9	Temporary Storage Tanks	No	Inactive; temporary storage for alkaline effluent
10	Former Hazardous Waste CAA	Yes	Inactive; managed hazardous waste for greater than 90 days in violation of generator status

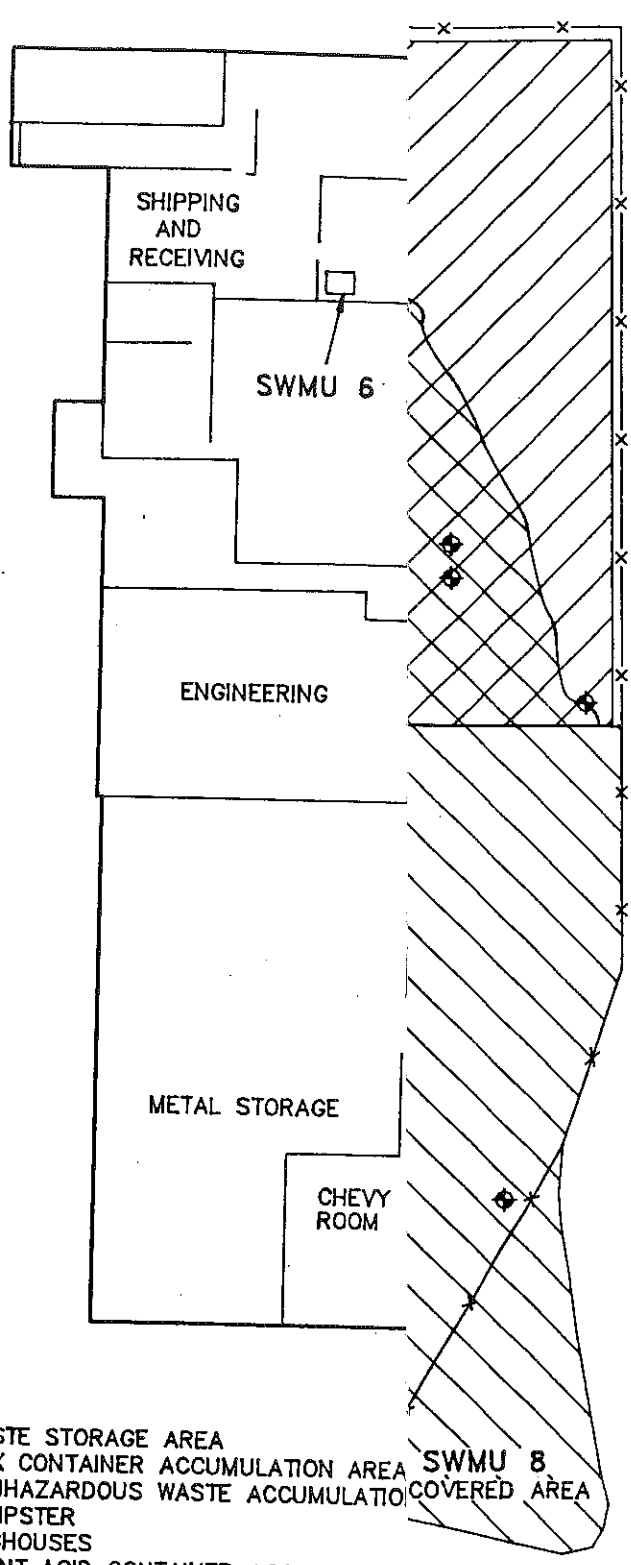
TABLE 1

SOLID WASTE MANAGEMENT UNITS (Continued)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit[a]	Status
11	Neutralization Sump	No	Active; treats alkaline effluent under an operating permit

Note:

[a] A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.



LEGEND

SWMU 1	WASTE STORAGE AREA
SWMU 2	WAX CONTAINER ACCUMULATION AREA
SWMU 3	NONHAZARDOUS WASTE ACCUMULATIO
SWMU 4	DUMPSTER
SWMU 5	BAGHOUSES
SWMU 6	SPENT ACID CONTAINER ACCUMULATIO
SWMU 7	FORMER SURFACE IMPOUNDMENT
SWMU 8	LANDFILL
SWMU 9	TEMPORARY STORAGE TANKS
SWMU 10	FORMER HAZARDOUS WASTE CONTAINE
SWMU 11	NEUTRALIZATION SUMP
AOC 1	INVESTMENT DEPARTMENT
⊕	MONITORING WELL LOCATION

SOURCE: MODIFIED FROM FANSTEEL SKETCH RECEIVED BY PRC ON NOVEMB

FANSTEEL.DWG - 01/04/94 - CFR - 309-R05032L1C

FANSTEEL ESCAST
ADDISION, ILLINOIS

FIGURE 2

FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

TABLE 2

SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit[b,c]
Spent solvent/D001, F002, and F003	Etching and degreasing	1 and 10
Waste petroleum naphtha/D001, D018, and D039	Maintenance parts washer	None
Waste freon and acetone mixture/F001[c]	Etching and degreasing	1 and 10
Spent hydrochloric acid and water/NA	Process tank cleaning	6
Used wax/NA	Autoclave	1, 2, and 8
Broken molds/NA	Product cleaning	1, 3, 4, 7, and 8
Caustic sludge/NA	Product cleaning	1 and 3
Baghouse dust/NA	Product cleaning	1, 4, and 5
Metal filings and scrap/NA	Product finishing	1 and 3
Waste oil/NA	Production machines	1
Soil cuttings/NA[c]	Groundwater monitoring well installation	1
Slag/NA	Molten steel production	1 and 3
Wastewater/NA	Jet blasting process	7

TABLE 2

SOLID WASTES (Continued)

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit[b, c]
Alkaline effluent/NA	Discharge from Kolene process	7, 9, and 11
Sludge/NA	Unknown	8

Notes:

[a] Not applicable (NA) designates nonhazardous waste.

[b] "None" indicates that the waste stream is not managed on site.

[c] Indicates that this waste is no longer generated at the facility.

(SWMU 1). During past compliance inspections, this waste was found to be stored in the Former Hazardous Waste Storage Area (SWMU 10). The facility generates about 55 gallons of this waste every 3 months. Solvent Systems International, Inc. (Solvent Systems), transports this waste to Petrochem Processing, Inc. (Petrochem), in Detroit, Michigan, for fuel blending.

Waste petroleum naphtha (D001, D018, and D039) is generated when two 30-gallon parts washers are emptied. Each month about 23 gallons of this waste is transported by Safety-Kleen Corporation (Safety-Kleen) to its facility in Elgin, Illinois, for recycling. This waste is not managed on site.

In the past, the facility generated a waste freon and acetone mixture (F001) from the etching and degreasing of wax clusters. Drums of waste freon and acetone were managed in the Former Hazardous Waste Container Accumulation Area (CAA) (SWMU 10) and the Waste Storage Area (SWMU 1). This waste was recycled on site by Solvent Systems of West Dundee, Illinois. The use of the freon and acetone mixture was discontinued 2 to 2.5 years ago. Information on the generation rate is unavailable.

Nonhazardous wastes generated by Fansteel include spent hydrochloric acid (HCl) and water, used wax, broken molds, caustic sludge, baghouse dust, metal filings and scrap, waste oil, soil cuttings, slag, wastewater, alkaline effluent, and sludge.

Nonhazardous spent HCl and water are generated when the mixture is removed from a process tank which is used for leaching soluble core wax. When the mixture is no longer effective and has a pH higher than 2, the facility pumps the spent HCl and water mixture into 55-gallon drums. These drums are managed in the Spent Acid CAA (SWMU 6). The facility generates about 20 55-gallon drums of this waste each year. The waste is transported to Chem-Met Services, Inc., in Wyandotte, Michigan, by ELK Transportation, Inc. (ELK Transportation), for treatment. Before 1987, this waste was discharged to the sanitary sewer in batches.

Used wax is generated when the molds are heated in the autoclave. The used wax is collected under the autoclave in a 5-gallon pail, then is immediately transferred to a 1.5-cubic-yard (yd^3) plastic container, which comprises the Wax CAA (SWMU 2). When the plastic container is full, it is transferred to the Waste Storage Area (SWMU 1). Used wax was found in the Landfill (SWMU 8)

during soil sampling. The facility representative stated that used wax was not disposed of in SWMU 8. The facility generates about 3,000 pounds of waste wax each month. The waste is transported by Yates Manufacturing to its facility in Chicago, Illinois, for reclamation.

Nonhazardous broken molds are generated when they are removed from the metal castings. The molds are made of a ceramic material. This waste is collected throughout the facility in small hoppers, part of the Nonhazardous Waste Accumulation Areas (SWMU 3), which are combined with other special waste in dumpsters and 55-gallon containers in the Waste Storage Area (SWMU 1), and the Dumpster (SWMU 4). The combined waste is transported as a special waste by Browning Ferris Industries (BFI) to one of its landfills. In the past, this waste was managed in the Former SI (SWMU 7) then dredged from SWMU 7 and placed in the Landfill (SWMU 8), in which case it was called foundry sand or ceramic fill.

Caustic sludge results from cleaning the clusters of metal parts. The facility collects the caustic sludge in a small hopper in the production area [Nonhazardous Waste Accumulation Areas (SWMU 3)]. When full, the caustic sludge is transferred to a 15-yd^3 dumpster in the Waste Storage Area (SWMU 1). The facility generates 1 ton of this waste per month. The caustic sludge is transported to Peabody Coal Company (Peabody) in Belleville, Illinois, by various transporters. Peabody uses the caustic sludge to neutralize acid runoff from its mining operations. Although the caustic sludge may be characteristic for corrosivity, the waste is not manifested as a RCRA waste because it is used as an effective substitute for a commercial product under the Industrial Exchange Service method of waste minimization (IEPA 1992c). Fansteel and Peabody share the expense of shipping and no other fees are charged.

Nonhazardous baghouse dust is generated by four permitted Baghouses (SWMU 5). The baghouses are associated with finishing operations. Analytical results of this waste indicate that it does not contain toxicity characteristic leachate procedure (TCLP) components (PRC 1991). Dust from the baghouses is emptied once per week into fiber 55-gallon drums and the drums are transferred to the Dumpster (SWMU 4) or dumpsters in the Waste Storage Area (SWMU 1). Approximately four drums of baghouse dust is generated each week. The waste is transported as a special waste by BFI to one of its landfills.

Metal filings and scrap are generated from finishing and miscellaneous production operations. This waste is collected in the Nonhazardous Waste Accumulation Areas (SWMU 3) and is transferred to the Waste Storage Area (SWMU 1). Approximately 10 yd^3 of metal filings and scrap is generated every 3 weeks. This waste is transported by Dubek Metal Processing (Dubek) to its facility in Lemont, Illinois, for recycling.

Nonhazardous waste oil is generated when machine oils are changed. The facility generates one 55-gallon drum of waste oil per month and manages this waste in the Waste Storage Area (SWMU 1). The waste is transported by Illinois Recovery Systems, Inc., to its Wheeling, Illinois, facility for fuel blending.

Soil cuttings generated during the installation of groundwater monitoring wells are stored in the Waste Storage Area (SWMU 1). Approximately 40 to 45 55-gallon drums have been stored on site since 1987. Fansteel has not arranged to have these drums removed and contends that their removal is the responsibility of RMT, Inc. (RMT), Fansteel's environmental contractor.

Nonhazardous slag is generated during the production of molten steel. The slag is collected in three 55-gallon drums, part of the Nonhazardous Waste Accumulation Areas (SWMU 3). The drums are transferred to the Waste Storage Area (SWMU 1) and combined with metal filings and scrap. The facility generates two 55-gallon drums of slag each day. Dubek transports this waste to its facility in Lemont, Illinois for recycling.

Alkaline effluent from the Kolene process, which uses a sodium hydroxide solution, discharged to the Former SI (SWMU 7) in the past. When use of the Former SI (SWMU 7) was discontinued, the alkaline effluent was collected in Temporary Storage Tanks (SWMU 9). The waste is now treated in the Neutralization Sump (SWMU 11) and is discharged to the Village of Addison sanitary sewer under an operating permit. The permit allows 1,440 gallons per day (gpd) to be discharged. Additional information regarding this permit is in Section 2.5.

In the past, the facility used a high pressure jet of water to remove the ceramic molds from the metal parts. This water jet blasting process was conducted in the Former SI (SWMU 7). Wastewater, with settled solids removed, discharged from SWMU 7 to Salt Creek through a storm sewer. The water

jet blasting process was discontinued in about 1984 when TCA was inadvertently discharged into the SI. This release is discussed in further detail in Section 2.4.

A layer of sludge was found in the Landfill (SWMU 8) during investigative activities. The contaminated sludge layer may not have come from the Former SI (SWMU 7), but may have been discharged into SWMU 8 through a pipe or tile (IEPA 1990a). Its actual source has not been indicated by the facility representative or in the investigation reports. Approximately 1,200 yd^3 of sludge exists within SWMU 8.

2.4 HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to groundwater, surface water, air, and on-site soils at the facility. Releases to on-site soils, groundwater, and surface water have been documented for the Former SI (SWMU 7) and Landfill (SWMU 8). In 1984, IEPA Division of Water Pollution Control inspected Fansteel and determined that SWMU 7 was a hazardous waste treatment lagoon because wastewater and TCA were discharged to the unit. Fansteel also reported that alkaline effluent was accidently spilled into SWMU 7 on two occasions in 1983. SWMU 7 consists of a 40-foot by 100-foot by 6-foot deep SI. The walls of the unit are concrete and the base is soil. In the past, the unit contained 2 to 3 feet of foundry sand. Wastewater in the SI contained 108 parts per billion (ppb) TCA, and waste foundry sand at the bottom of the SI contained 11.8 parts per million (ppm) TCA (dry weight) (RMT 1984). Fansteel discontinued use of SWMU 7 and the unit was RCRA-closed in 1985. On March 6, 1986, IEPA acknowledged receipt of closure certification and approved closure (IEPA 1986). IEPA then requested that the facility investigate volatile organic compounds (VOC) contamination in soils and groundwater outside of SWMU 7, in the adjacent Landfill (SWMU 8), Waste Storage Area (SWMU 1), and other nearby areas. The following sections discuss documented releases to on-site soils, groundwater, and surface water. Section 2.5 discusses IEPA's response to these releases.

2.4.1 Documented Releases to On-Site Soils

In June 1988, 40 soil borings were installed on Fansteel property on the east side of the plant during a site investigation performed by RMT, as reported in the "Site Investigation to Supplement

Groundwater Investigation Closed Surface Impoundment Area" (RMT 1988b). The borings were placed in both the Landfill (SWMU 8) and under the Waste Storage Area (SWMU 1), which are adjacent to the Former SI (SWMU 7). SWMU 8 was found to extend under SWMU 1 and beyond the fence on the facility's southeast corner. Soil horizons identified during the borings were visually classified into the following four categories including: ceramic fill, sludge, black silty clay, brown silty clay, and natural silty clay.

The distribution of VOCs in on-site soil samples was relatively consistent in all samples with TCA and 1,1-dichloroethane (DCA) accounting for 78 percent of the constituent concentration measured.

RMT estimated that there is approximately 3,300 yd^3 of ceramic fill within the Fansteel property; ceramic fill was found in the Landfill (SWMU 8), under the Waste Storage Area (SWMU 1), and beyond the fence line at the southeast corner. One sample consisting only of ceramic fill had a total VOC concentration of 0.03 milligrams per kilogram (mg/kg). The thickness of ceramic fill ranged from 1.0 to 6.5 feet. Before 1984, ceramic fill was dredged from the Former SI (SWMU 7) and placed in SWMU 8 and other low spots on the facility property.

RMT estimated that approximately 1,200 yd^3 of sludge exists within the Landfill (SWMU 8). Sludge was detected in the Landfill (SWMU 8) and under the Waste Storage Area (SWMU 1). Samples of the sludge were analyzed for VOCs and had total VOC concentrations of 23 and 79 mg/kg. The thickness of sludge ranged from 1.5 to 6.0 feet. RMT described the sludge as "pourable or nearly pourable (gelatin-like consistency) and often had a sheen and odor characteristic of fuel oil" (RMT 1988a). The source of this material has not been indicated.

Silty clay was observed in every boring and is the natural material underlying the topsoil in the Addison, Illinois, area. The color varied considerably, but included black and various shades of brown and gray silty clay. In borings where sludge was identified, black silty clay was always found immediately beneath it. RMT presumed that the natural silty clay was discolored black from the sludge and classified it separately from the other colors of silty clay. Three samples of black silty clay were analyzed for VOCs. The total VOC concentrations were similar and varied from 1.5 to 2.3 mg/kg. A volume estimate of the black silty clay indicates there is approximately 4,200 yd^3 of black silty clay within the Fansteel property.

Samples of brown silty clay contained 2.6 to 15.6 mg/kg total VOCs.

In two deep borings and two monitoring wells, VOCs (approximately 10 mg/kg or less) extended approximately 4 feet below the discolored horizons into the natural silty clays. RMT stated that it is unlikely that VOCs have migrated more than 4 feet into the natural material because natural silty clay is relatively uniform, not very permeable, and is omnipresent beneath the fill materials. The maximum depth of measured VOCs was 17 feet, with the greatest concentrations between 6 to 15 feet. However, soil borings were not extended to a point where contamination could no longer be detected (IEPA 1990a).

The highest concentration of TCA found in the soil sample at the bottom of SWMU 7, after the waste and 6 inches of soil were removed during closure, was 0.173 mg/kg (dry weight) (RMT 1988a).

On January 18, 1990, IEPA Division of Land Pollution Control (DLPC) stated that the contaminated material should not remain in place and requested a plan for removal of all contaminated sludge be submitted to IEPA (IEPA 1990a). A "Conceptual Interim Cover Design" report was prepared by RMT in 1990 which recommended construction of an asphalt cover over the Landfill (SWMU 8) (RMT 1990). IEPA suggested that a syntectic layer (tarp) such as 10 or 20 millimeter high density polyethylene or poly vinyl chloride be spread over the contaminated layer including the lagoon as a temporary measure only (IEPA 1990b). The tarp has been in place since late-1990. IEPA is currently waiting for the requested plan for removal of contaminated sludge.

2.4.2 Documented Releases to Groundwater

Four rounds of groundwater samples were collected from on-site monitoring wells between November 1987 and June 1989.

Relatively consistent concentrations of DCA [86 to 144 micrograms per liter (μg/L)] and TCA (6.9 to 25 μg/L) were present in the monitoring well 50 feet east of the Former SI (SWMU 7) near the center of the Landfill (SWMU 8) (RMT 1989).

RMT suggested remedial actions in its "Bedrock Aquifer Investigation" report prepared in 1991 which included the following: source removal or in situ treatment for affected soils along with containment or extraction and treatment for shallow groundwater (RMT 1991). At the time of the PA, no permanent remedy had been approved (IEPA 1991b). IEPA DLPC will likely require removal of contaminated material in the Landfill (SWMU 8).

2.4.3 Documented Releases to Surface Water

In 1983, IEPA found that discharge from Fansteel (before entering Salt Creek via a storm sewer) contained concentrations of 1400 ppb TCA, 2700 ppb dichloroethylene, 570 ppb methylene chloride, 250 ppb DCA, 99 ppb 1,2-dichloroethane, 160 ppb toluene, and 740 ppb acetone (EPA 1984). Before 1984, wastewater from the Former SI (SWMU 7) discharged to Salt Creek via a storm sewer (IEPA 1987). In 1985 and 1986, TCA was found in the facility's effluent ranging from 1.1 to 10.5 mg/L. This effluent discharge occurred under the National Pollutant Discharge Elimination System (NPDES) permit issued on December 18, 1984, which allowed discharge to Salt Creek via a storm sewer. Fansteel has rerouted cooling tower and refrigeration system discharges to the sanitary sewers but storm water runoff continues to be discharged to Salt Creek via storm sewers (IEPA 1991a).

2.5 REGULATORY HISTORY

On August 18, 1980, Escast submitted a Notification of Hazardous Waste Activity form to EPA (Escast 1980). The notification indicated that the facility generated corrosive (D002) waste. Subsequent notifications have not been submitted to reflect changes in ownership or waste streams. No RCRA Part A permit application was found in the facility's file.

In June 1984, IEPA determined that the Former SI (SWMU 7) must be closed as a RCRA hazardous waste SI when TCA was found in the water (RMT 1984). Fansteel discontinued use of SWMU 7 in 1984. In September 1984, an EPA contractor completed a Potential Hazardous Waste Site Inspection Report for the facility (EPA 1984). On December 13, 1984, IEPA approved Fansteel's closure plan (IEPA 1984b). On March 6, 1986, IEPA acknowledged receipt of closure certification, approved closure, and indicated that Fansteel must continue to meet generator requirements (IEPA 1986).

After closure was approved, IEPA informed Fansteel that it intended to list SWMU 7 on the state remedial action priority list (SRAPL) because it was concerned that VOCs may have been present in the soils and groundwater outside of SWMU 7 (RMT 1988a). In 1985, the facility was listed under SRAPL due to potential for groundwater contamination. In 1989, IEPA signed a Record of Decision (ROD) for the facility. The Description of Proposed Work in the ROD required a Phase Two remedial investigation, a risk assessment, a feasibility study, and a surface water investigation to be coordinated by the Division of Water Pollution Control. Proposed work was approved for State-financed remedial action (IEPA 1989b).

At the time of the PA, a risk assessment had not been completed. IEPA requested that the Illinois Department of Public Health (IDPH) prepare a Public Health Assessment of the site (IEPA 1992a). This Public Health Assessment has not been completed yet because the Village of Addison no longer uses groundwater as a source of municipal water (PRC 1994b). RMT submitted to IEPA a document entitled "Remedial Alternatives Analysis" on behalf of Fansteel in January 1992. Because this document did not include contaminated soil removal as an option, IEPA suspended review of the document and requested that it be expanded to include a detailed evaluation of contaminated soil removal as a viable option (IEPA 1992a). No further action has occurred since 1992. IEPA is awaiting the Public Health Assessment and will base future work on the results of this assessment. Based on available information, IEPA DLPC is recommending that the facility remove contaminated material in the entire Landfill (SWMU 8).

Activities conducted by RMT to investigate on-site soil, groundwater, and surface water contamination associated with the Former SI (SWMU 7), at the request of IEPA, were discussed in Section 2.4.

The facility currently operates as a large-quantity generator storing hazardous waste for less than 90 days.

In the past, Fansteel had RCRA compliance problems. These violations, observed during one inspection conducted by IEPA and during two inspections conducted by EPA contractors in 1984, 1988, and 1991, respectively, pertained to deficiencies including the following: lack of contingency plan, lack of training records, inappropriate waste management, lack of waste determination and

analysis, lack of a Part A permit application, and a lack of annual reports (IEPA 1984a and 1991c). Both of these inspections were conducted following treatment, storage, and disposal regulations because hazardous wastes at the facility were stored for more than 90 days. In addition, the facility was found to have land disposal restriction (LDR) violations (EPA 1988a). The Former SI (SWMU 7) underwent RCRA closure as a result of the 1984 inspection. All other violations were resolved, and no enforcement action was taken (EPA 1988b and IEPA 1992b).

The facility is required to have operating air permits. On June 21, 1993, IEPA issued an operating air permit (No. 043005ADH) (IEPA 1993a) to cover the following:

- Eight injection molding units
- Five injection presses
- An etching area and six mold units with baghouse (SWMU 5)
- Four induction furnaces
- One wax oven
- Three casting furnaces with afterburners
- Two pusher furnaces with afterburners
- A knock-out hammer
- A Kolene tank
- Four abrasive cut-off wheels with a baghouse (SWMU 5)
- Two grit blasters with a baghouse (SWMU 5)
- Seven belt sanders and a grit blaster with a Baghouse (SWMU 5)
- Two natural gas-fired boilers
- Ten natural gas-fired unit heaters

The facility has not violated its former air permits. The facility has no history of odor complaints from area residents.

This facility has one former and one current water pollution permit with IEPA. An NPDES permit (No. IL0038474) was issued to Fansteel on December 18, 1984, which became effective January 17, 1985 with an expiration date of December 15, 1989. The expired NPDES permit was for cooling tower overflows and refrigeration system blowdown, which were allowed to discharge to Salt Creek via a storm sewer.

The current operating permit (No. 1984-HB-1238) was granted to Escast to construct, own, and operate a pretreatment unit, referred to in this report as the Neutralization Sump (SWMU 11). The issuance date was September 11, 1986, with no expiration date. The pretreatment facility is described as follows:

> A 175 gallon neutralization sump with automatic pH analyzer and recorder and compressed air mixing and necessary piping, pumps and appurtenances to neutralize and discharge 1,440 gpd average and maximum (1.0 PE organic) of rinse water from a caustic alkali metal cleaning process (alkaline effluent) with discharge to the Village of Addison sewer system and Sanitary Treatment Plant (IEPA 1989a).

The facility had compliance problems with its NPDES permit. Violations included lack of monitoring reports and discharges above State effluent standards (IEPA 1983).

During a Legal Support Investigation in 1989, IEPA found that cooling tower overflows and refrigeration system blowdowns covered in the NPDES permit, were hooked up to the Village of Addison sanitary sewer despite the fact that such a hook-up is against the village ordinances (IEPA 1989a). Fansteel now has a permit with the Village of Addison (Permit No. IPT860026) for discharges to the sanitary sewer.

Four steel USTs were installed on the east side of the Fansteel building in 1972. Three of these tanks are active and contain the following raw materials: the first 8000-gallon UST contains "Tech Sol" (an alcohol product), the second 6000-gallon UST contains ethyl silicate, and the third 8000-gallon UST contains isopropyl alcohol. The fourth tank is no longer in use and was filled with sand by Fansteel employees in about 1990. It also held ethyl silicate.

It is unclear whether the closed tank underwent integrity testing before it was filled. None of the USTs have release controls. No other information regarding the active tanks was available from the facility representatives.

These tanks do not contain materials which are on the CERCLA Hazardous Substance List (40 CFR 302.4). The Fansteel USTs are not regulated as chemical USTs and do not require registration with the State Fire Marshall or IEPA for operation or closure (PRC 1994a). Therefore, the USTs are not considered an AOC in this report. The manhole covers for these USTs are in the Waste Storage Area (SWMU 1) and photographs of them are included in Appendix A as Photographs No. 19 and 20.

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and groundwater in the vicinity of the facility.

2.6.1 Climate

The climate in DuPage County is continental. The average daily temperature is 49 °F. The lowest average daily temperature is 13.3 °F in January. The highest average daily temperature is 82.4 °F in July.

The total annual precipitation for the county is 33.42 inches. The mean and annual lake evaporation for the area is about 30 inches (U.S. Department of Commerce 1983). The 1-year, 24-hour maximum rainfall is about 9.35 inches (Bair 1992).

The prevailing wind is from the southwest. Average wind speed is highest in March and April at 11.9 miles per hour (Bair 1992).

The average snowfall for the area is 38.7 inches per season. Precipitation falls mostly from air which has passed over the Gulf of Mexico. Snowfall, however, is sometimes the result of moisture from Lake Michigan (Bair 1992).

2.6.2 Flood Plain and Surface Water

The Fansteel facility is not located in a flood-prone area (FEMA 1987).

The nearest surface water body, Salt Creek, is located 0.5 mile east of the facility and is used for recreational purposes. Salt Creek receives effluent from the Addison Sanitary Treatment Plant and untreated storm water from storm sewers. Salt Creek flows south to the Des Plaines River.

Runoff from the west, northwest, and southwest portions of the facility discharges to the storm sewers on Church Street. Runoff from the building, as well as the Waste Storage Area (SWMU 1), drains through the plant storm sewer drainage system, exiting by the former NPDES discharge point (ID No. IL0038474) before going into the city storm sewer line located along the east property line. Runoff from the area between the eastern edge of the property and Addison Avenue appears to be draining along two ditches located on each side of an abandoned railroad grade that runs parallel to the road and the fence. The ditches discharge to storm water sewers. The unpaved area [Landfill (SWMU 8)] surrounding the Former SI (SWMU 7) is covered with several feet of ceramic fill, and there is no evidence of appreciable runoff in this area. The area to the south and southeast of the facility drains overland into the municipal water retention pond (RMT 1989).

On a larger scale, surface drainage in this area is toward Salt Creek which is approximately 0.5 mile east of the facility.

2.6.3 Geology and Soils

Information in this section was obtained from "Additional Site Investigation for Fansteel/Escast, Inc., Addison, Illinois" prepared by RMT, Fansteel's environmental contractor, in November 1989.

The geology in the Addison, Illinois, area consists of glacial deposits overlying Silurian dolomite. Boring logs for area wells indicate that the typical strata consist predominantly of a substantial layer (70 to 90 feet) of clay material (Wadworth Till Member) overlying approximately 30 to 40 feet of sand and gravel deposits. This appears to be relatively consistent for the area based on a compilation of data from well logs within a 1-mile radius of the facility.

The site geology was evaluated during three investigations conducted by RMT and was documented in the November 1989 report (RMT 1989). In the first two investigations, 48 borings ranging in depth from 10 to 50 feet were drilled and sampled in an area approximately 1.2 acres in size.

In the third investigation, 12 additional soil borings ranging in depth from 10 to 60 feet and 11 backhoe test pits ranging in depth from 11 to 22 feet were installed in this same area. The site is immediately underlain by 0 to 12 feet of fill. In the Landfill (SWMU 8) around the Former SI (SWMU 7), the upper portion of the fill consists of 1 to 6 feet of light gray ceramic material (sand-sized particles) which is referred to as broken molds in this report. Underlying the ceramic material and in the areas below the paved parking lot [Waste Storage Area (SWMU 1)], the fill ranges in thickness from 0 to 6 feet and consists predominantly of brown silty clay with occasional lenses and pockets of brown sandy gravel. In a number of borings to the north and east of SWMU 7 (in SWMU 8 and under SWMU 1), a 0- to 6-foot-thick layer of a black, high plasticity, stained soil with a petroleum product odor and an oily sheen exists (referred to as the sludge layer previously in this report). This stained soil layer was often mixed with light gray ceramic fill or silty clay and occasional pieces of pink wax. Where this material was encountered, the underlying brown silty clay had streaks of black staining for 1 to 3 feet.

Below the fill is a 1- to 2-foot layer of black silty clay topsoil. Underlying the topsoil is 1 to 10 feet of brown to reddish-brown silty clay (glacial till) followed by at least 30 to 35 feet of dense gray silty clay (glacial till) with occasional silt and sand lenses. Regional data indicate that this clay unit may be up to 70 feet thick.

2.6.4 Groundwater

The following information was obtained from "Ground Water Investigation Closed Surface Impoundment Area" prepared by RMT in August 1988 (RMT 1988). Dolomite bedrock (Niagara Formation) underlies, and is hydraulically connected with, the basal sand and gravel. The water table in the shallow clayey strata is approximately 10 to 15 feet below ground surface (bgs). Groundwater flow rates through the clayey strata are probably very low due to the low hydraulic conductivity of this type of soil. Soil borings performed during the RMT investigations indicate that the site is underlain by at least 30 to 50 feet of silty clay. Regional data suggest that the total clay thickness

could be as thick as 70 feet. A laboratory permeability test of the silty clay yielded a value of 1.9 x 10^{-8} centimeters per second (cm/sec).

Regional data indicate that flow in the dolomite aquifer (including sand and gravel directly overlying the dolomite) is toward the northeast. If the flow is toward the northeast, all but one of the Addison municipal wells are upgradient from the Fansteel facility.

Four water table observation wells and two deeper piezometers were installed in the facility borings to evaluate groundwater conditions. Water level measurements taken in these wells indicate that perched groundwater is present in the shallow silty clay soils underlying the facility. Groundwater is generally found at depths of 10 to 20 feet bgs. The two deeper piezometers were dry or contained a small amount of water (less than 3 feet) for a period of 6 months following installation of the wells indicating that an unsaturated zone is present in the clay starting somewhere between the bottom of the water table observation wells (depth of 25 feet) and the piezometers (depth of 50 feet) (RMT 1988a).

Groundwater, in this shallow perched zone, flows in a southern and southeastern direction in the area of the Former SI (SWMU 7). RMT calculated the horizontal groundwater flow velocity to be approximately 6 feet per year (ft/yr), and the vertical flow velocity was calculated to be approximately 0.4 ft/yr (RMT 1988a).

The Village of Addison installed a public water supply in 1925. Seven wells and another well for emergency service were in use until 1992. All wells are now maintained for emergency use only. These wells obtained their water from the basal sand and gravel deposits and the underlying Niagaran (Silurian) dolomite and Maquoketa (Ordovician) shale. The municipal well nearest to the facility is well No. 1, which is approximately 1500 feet northeast of the Fansteel facility.

Prior to 1974, a number of private wells were previously constructed in the area. The nearest of these wells is approximately 3,000 feet away from the plant. These wells generally obtain their water from the same formation as the municipal wells (RMT 1988a).

Since March 1991, the Village of Addison obtains its water from the DuPage Water Commission (DWC). DWC obtains water from Lake Michigan. All private wells within the village limits were abandoned or capped between 1974 and 1991 (PRC 1993).

2.7 RECEPTORS

The facility occupies 1.2 acres in a mixed-use area in Addison, Illinois. Addison has a population of about 32,400 (PRC 1993).

The facility is bordered on the north by a vacant industrial building, on the west by residences, on the south by a municipal water retention pond, and on the east by a vacant wooded lot. The nearest residential area is located across the street on the west side.

The nearest natural surface water body, Salt Creek, is located 0.5 mile east of the facility and is used for recreational purposes.

Groundwater is not used as a water supply. There are no industrial or private drinking water wells within the Village of Addison. The Village of Addison receives water from the DWC, which draws water from Lake Michigan. If the DWC cannot supply water, the Village draws water from eight municipal wells, which are for emergency use only. The nearest municipal well is located 1,500 feet northeast of the facility (PRC 1993). This well is located downgradient of the facility.

Sensitive environments are not located on site. Three sensitive environments are within 0.5 miles of the facility. Cricket Creek is located east, Oak Meadows is located to the north east, and Fullerton Park is located to the south west of the facility. All of these sensitive environments are property of the Forest Preserve District of DuPage County (FPDDC) (FPDDC 1993).

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 11 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC's observations. Figure 2 shows the SWMU locations.

SWMU 1 **Waste Storage Area**

Unit Description: This unit consists of an approximately 200-foot by 200-foot asphalt parking lot located outdoors. The asphalt is unsealed and there are no berms. The unit is surrounded by a 8-foot cyclone fence. Fill material which extends under this unit is discussed with the Landfill (SWMU 8).

Date of Startup: This unit began operation in 1949.

Date of Closure: This unit is active.

Wastes Managed: This unit manages spent solvent (D001, F002, and F003) on a less-than-90-days basis, and nonhazardous wastes including used wax, broken molds, caustic sludge, baghouse dust, metal filings and scrap, waste oil, soil cuttings, and slag. Wastes are managed in dumpsters, plastic containers, 55-gallon steel or fiber drums. In the past, the unit also managed waste freon and acetone (F001) in steel 55-gallon drums. The ultimate disposition of these wastes is as follows:

Waste	Off-site Location	Disposition
Spent solvent	Petrochem Processing, Detroit, MI	Fuel blending
Used wax	Yates Manufacturing, Chicago, IL	Reclamation

Broken molds	BFI, Melrose Park, IL	Landfill
Caustic sludge	Peabody Coal Company, Belleville, IL	Used as a product to neutralize acid
Baghouse dust	BFI	Landfill
Metal filings and scrap	Dubek Metal Processing, Lemont, IL	Recycled
Waste oil	Illinois Recovery Systems, Wheeling, IL	Fuel blending
Soil cuttings	None	None
Slag	BFI	Landfill
Waste freon and acetone	Solvent Systems, West Dundee, IL	Recycled

Release Controls:

This unit is constructed of asphalt. However, it is heavily cracked, unsealed, unbermed, and has a storm sewer, which discharges to Salt Creek, in the center of it.

History of Documented Releases:

No releases from this unit have been documented. Releases found in fill material under this unit are discussed with SWMU 8.

Observations:

During the VSI, the unit contained the following:

Waste	Amount
Spent solvent	220 gallons in closed drums
Used wax	11 1.5-yd^3 open containers and 32 open 55-gallon drums
Broken molds	Unknown quantity in one open dumpster
Caustic sludge	15 yd^3 in a covered dumpster
Baghouse dust	Unknown quantity in one open dumpster
Metal filings and scrap	10 yd^3 plus 15 55-gallon open drums
Waste oil	495 gallons in closed drums
Soil cuttings	40 to 45 closed, 55-gallon drums
Slag	Unknown quantity with metal filings and scrap

Wooden pallets, old process equipment, and other items were also stored in this area during the VSI. PRC noted that the asphalt was unsealed and heavily cracked throughout. The unit was unbermed and any release could potentially migrate from the facility directly onto off-site soils. The facility representative pointed out a break in the fence where vandals had entered to steal scrap metal. The break has been repaired. A 5-foot by 5-foot section of this unit has been designated for management of hazardous waste. The area is marked by yellow spray paint on the asphalt and is located against the fence on the far east border of the property. The hazardous waste containers were labeled, stored closed, and in good condition. Photograph No. 1 shows the metal filing and scrap containers. Note the storm sewer drain, surrounded by water, in the background. Two monitoring wells are also visible. The dumpster for caustic sludge was covered by a tarp (see Photograph No. 2). The waste oil drums were stored closed and in fair condition (see Photograph No. 3). Containers (55-gallon drums) of soil cuttings were found to be deteriorating and several labels were illegible (see Photographs No. 4 and 5). Used wax containers (plastic and cardboard) were stored open, however, this is probably an acceptable practice because the wax is solidified (see Photograph No. 6).

SWMU 2 **Wax CAA**

Unit Description: This unit consists of a 5-gallon pail which collects molten wax discharged from the autoclave. The pail is emptied into 1.5-yd^3 plastic or 40-gallon cardboard containers. The unit is located indoors on concrete and manages nonhazardous waste. The area occupies approximately 20 square feet.

Date of Startup: This unit began operation in 1949.

Date of Closure:	This unit is active.
Wastes Managed:	This unit manages molten used wax from the autoclave which solidifies as it cools. Full cardboard and 1.5-yd^3 containers of solidified used wax are transferred to the Waste Storage Area (SWMU 1) where they are transported off site to Yates Manufacturing in Chicago, Illinois, for reclamation.
Release Controls:	This unit is located indoors on concrete. There are no floor drains in the area.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	During the VSI, the unit contained one partially full 5-gallon pail and one partially full 1.5-yd^3 container of used wax. PRC noted spilled wax that had hardened on the floor beneath the collection pail (black pail in photograph) (see Photograph No. 7).

SWMU 3 **Nonhazardous Waste Accumulation Areas**

Unit Description:	This unit consists of 5-gallon pails, 55-gallon drums, and hoppers ranging in size from 1 to 3 yd^3. These are located on concrete throughout the facility to accumulate broken molds, caustic sludge, metal filings and scrap, and slag.
Date of Startup:	The unit began operation in 1949.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages nonhazardous broken molds, caustic sludge, metal filings and scrap, and slag. These wastes are transferred to the Waste

	Storage Area (SWMU 1) and are held there until they are transported off site.
Release Controls:	This unit is located indoors on concrete. No floor drains were observed.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained various quantities of nonhazardous wastes during the VSI. PRC noted that the accumulation containers were in good condition (see Photographs No. 8, 9, and 10).
SWMU 4	**Dumpster**
Unit Description:	This unit consists of an open, 20-yd^3 dumpster used for general refuse, baghouse dust, and broken molds. It is located outdoors on broken concrete. Runoff from this unit would flow south across a parking lot to off-site soils.
Date of Startup:	The date this unit began operation is unknown.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages general refuse, baghouse dust, and broken molds. The waste is ultimately transported by BFI to one of its landfills.
Release Controls:	This unit has no release controls.
History of Documented Releases:	No releases from this unit have been documented.

Observations:	The unit contained general refuse and broken molds during the VSI. PRC noted that debris from broken molds was scattered on the ground around the dumpster. The concrete beneath the dumpster was broken to the extent that in places there appeared to be exposed soil (see Photograph No. 11).
SWMU 5	**Baghouses**
Unit Description:	This unit consists of four baghouses which are operated under an air permit. They are located outdoors on concrete or on concrete platforms.
Date of Startup:	This unit began operation in 1977.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages particulate matter (baghouse dust) generated by various production and finishing operations. Once each week, the baghouse dust is emptied into 55-gallon drums which are transferred to the Waste Storage Area (SWMU 1) or the Dumpster (SWMU 4) and are emptied into dumpsters for transport to a BFI landfill.
Release Controls:	This unit has no measures to control the release of baghouse dust when the baghouses are emptied.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained an unknown quantity of baghouse dust during the VSI. The baghouses appeared to be in good condition. PRC noted some baghouse dust on the ground (see Photographs No. 12 and 13).

SWMU 6	**Spent Acid CAA**
Unit Description:	This unit is located in an area of the facility's shipping department. It is located indoors and is used only periodically when spent acid is removed from a process tank. The unit occupies an area large enough to hold four 55-gallon drums on concrete.
Date of Startup:	This unit began operation in December 1987 after IEPA informed the facility that it could no longer discharge spent acid to the sanitary sewer. Violation letters were not found during the PA.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages nonhazardous spent acid on a less-than-90-day basis. The waste is transported to Chem-Met Services, Inc., in Wyandotte, Michigan, by ELK Transportation for treatment.
Release Controls:	The unit is located indoors on concrete. PRC did not observe floor drains in the area.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit did not contain any waste during the VSI. PRC noted no evidence of release. Photograph No. 14 shows the area of the shipping department where the process tank is located. Spent acid containers are managed in this area.
SWMU 7	**Former SI**
Unit Description:	This unit consisted of a 40-foot by 100-foot by 6-foot deep SI located outdoors. The walls of the unit are concrete and concrete block. The

base of the unit was natural soil. A drain from this unit discharged to Salt Creek via a storm sewer in the past. Three sides of this unit are adjacent to the Landfill (SWMU 8).

Date of Startup: The date when this unit began operation is unknown, but it has probably been in operation since 1949.

Date of Closure: On March 6, 1986, IEPA reviewed the closure certification and approved closure (IEPA 1986). Closure activities included the removal of the following: 60,000 gallons of wastewater; 2 to 3 feet of waste foundry sand (broken molds); and 6 inches of natural soil. In 1985, IEPA requested that the facility begin monitoring for groundwater contamination around the unit.

Wastes Managed: This unit managed hazardous wastewater and broken molds. TCA and alkaline effluent were also discharged to this unit (it is unclear whether this discharge was routine or inadvertent). Before 1984, wastewater was allowed to discharge to a storm sewer which discharged to Salt Creek. Broken molds accumulated at the bottom of the unit and were apparently dredged from the unit and were used as fill in the Landfill (SWMU 8).

Release Controls: The unit had concrete walls. The drain from the unit to the storm sewer has been plugged since 1984.

History of Documented Releases: Releases to on-site soils and surface water have been documented from this unit. The approved closure plan for this unit required the removal of soil containing TCA at a concentration greater than 50 ppm (RMT 1984). During closure, 6 inches of soil was removed. The highest concentration of TCA found in the soil after removal of 6 inches of soil was 0.173 mg/kg (RMT 1988a). Wastewater in this

unit contained 108 ppb when it was sampled in 1984. Wastewater in this unit was discharged to surface water at this time. The facility also reported that alkaline effluent was accidentally discharged to this unit on two occasions in 1983.

Observations: The unit was overgrown with cattails during the VSI, and did not appear to be covered by the tarp. The west end of the unit contained what appeared to be broken molds (ceramic fill) (see Photograph No. 15).

SWMU 8 **Landfill**

Unit Description: This unit consists of all fill material which extends under the Waste Storage Area (SWMU 1), under a tarp-covered area approximately 0.5 acre in size, and the fill material which extends beyond the fence. All of these areas are on the east side of the facility. The depth of the fill material in the unit ranges from 0 to 12 feet. Contaminated soils (black silty clay) extend vertically for about an additional 4 feet. The Former SI (SWMU 7) and Waste Storage Area (SWMU 1) are adjacent to this unit.

Date of Startup: This unit began operation in 1949.

Date of Closure: This unit has been inactive since at least 1984, but it has not been closed. Around 1990, a synthetic cover (tarp) was placed over the unit under the direction of IEPA. A "Conceptual Interim Cover Design" report was prepared by RMT and submitted to IEPA in 1990 which recommended construction of an asphalt cover. RMT suggested remedial actions in its "Bedrock Aquifer Investigation" report prepared in 1991 which included the following: source removal or in situ treatment for affected soils along with containment or

extraction and treatment for shallow groundwater. As of September 1991, no permanent remedy had been suggested (IEPA 1991b).

Wastes Managed:

This unit manages broken molds (ceramic fill), used wax, and sludge of unknown origin. The fill material extends under the Waste Storage Area (SWMU 1) and beyond the fence on the facility's south east corner. RMT estimated the volume of each fill layer as follows:

- 3,300 yd^3 of ceramic fill
- 1,200 yd^3 of sludge
- 4,200 yd^3 of black silty clay

At a meeting on April 11, 1989, a Fansteel representative stated that barrels of waste were dumped "out back" during the 1950's (IEPA 1990a), presumably in this unit.

Release Controls:

The unit is unlined, has no secondary containment, sump, or perimeter barriers. The only release control is the tarp. Natural clay under the fill was laboratory analyzed and was found to have a hydraulic conductivity of 1.9×10^{-8} cm/sec (RMT 1988), however IEPA believes this is lower than what would be found in the field (IEPA 1990b).

History of Documented Releases:

Releases to on-site soils and groundwater are documented for this unit. Black and brown silty clay, which RMT presumed to be discolored natural silty clay, contained total VOC concentrations ranging from 1.5 to 15.6 mg/kg (RMT 1988). Groundwater from a well 50 feet east of SWMU 7, the Former SI, contained 86 to 144 mg/L DCA and 6.9 to 25 μg/L TCA.

	Fill material in the landfill also contained VOCs and these concentrations are discussed in Section 2.4.1.
Observations:	The unit contained various types of fill material during the VSI. PRC observed that the unit was covered with a synthetic tarp (see Photograph No. 16).
SWMU 9	**Temporary Storage Tanks**
Unit Description:	This unit consisted of four 10000-gallon portable storage tanks for all wastewater including water which was removed from the Former SI (SWMU 7). Another tank of unknown capacity held untreated alkaline effluent. Information concerning what the tanks were constructed of and how and where these tanks were maintained is unavailable.
Date of Startup:	This unit began operation about June 1984 when use of the Former SI (SWMU 7) was discontinued.
Date of Closure:	This unit has been inactive since 1986 when the alkaline effluent pretreatment system, Neutralization Sump (SWMU 11), was installed.
Wastes Managed:	This unit managed wastewater or water from the Former SI (SWMU 7) and untreated alkaline effluent. The ultimate disposition of the wastewater is unknown. The untreated alkaline effluent was transported off site as an industrial waste.
Release Controls:	This unit had no known release controls.
History of Documented Releases:	No releases from this unit have been documented.

Observations:	No observations of this unit were made during the VSI. The unit was used only temporarily and is no longer at the facility. Information concerning where these tanks were maintained is unavailable. However, the tanks were probably maintained on the east side of the building near SWMUs 1, 7, and 8. Photographs of these units are numbered 1 through 6, 15, and 16.
SWMU 10	**Former Hazardous Waste CAA**
Unit Description:	This unit was located indoors in the investment department and consisted of an area large enough to hold 5 to 10 drums on concrete.
Date of Startup:	The date this unit began operation is unknown.
Date of Closure:	This unit has been inactive since 1991. During a 1991 compliance evaluation inspection, hazardous wastes were found to have been stored on a greater-than-90-days basis. A Compliance Inquiry Letter was issued by IEPA (IEPA 1991c) and Fansteel had the waste transported off-site. IEPA considered the storage violation to be resolved and did not require closure of this unit (IEPA 1992b).
Wastes Managed:	This unit managed spent solvent (D001, F002, and F003) and waste freon and acetone (F001) in 55-gallon containers. Both wastes were also managed in the Waste Storage Area (SWMU 1). Solvent Systems transported the spent solvent to Petrochem for fuel blending. Solvent Systems recycled the waste freon and acetone on site.
Release Controls:	This unit was located indoors on concrete. Floor drains were not observed.
History of Documented Releases:	No releases from this unit have been documented.

Observations:	The unit did not contain any waste during the VSI. However, process tanks are now in the area (see Photograph No. 17). These are discussed as AOC 1.
SWMU 11	**Neutralization Sump**
Unit Description:	This unit consists of a system to pretreat alkaline effluent so that it may be discharged under operating permit No. 1984-HB-1238. The system consists of a 175-gallon neutralization sump with automatic pH analyzer and recorder, compressed air mixer, and necessary piping, pumps and appurtenances to neutralize and discharge 1440 gpd average and maximum (1.0 PE organic) of rinse water. Alkaline effluent with discharges to the Village of Addison sewer system and Sanitary Treatment Plant (IEPA 1989a). The alkaline effluent is neutralized with sulfuric acid.
Date of Startup:	The unit began operation in 1986.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages alkaline effluent which is neutralized then discharged to the Village of Addison sewer system.
Release Controls:	This unit is located indoors on unsealed concrete. The sump is constructed of concrete.
History of Documented Releases:	The facility has a history of compliance problems regarding its former NPDES permits. It is unclear if these problems are related to this SWMU.

Observations:	PRC noted that the concrete around this unit is deteriorating from spilled alkaline material from the nearby Kolene machine. Housekeeping in this area is generally poor; electrical cords and disconnected piping were located throughout the area (see Photograph No. 18).

4.0 AREAS OF CONCERN

PRC identified one AOC during the PA/VSI. This AOC is discussed below; its location is shown in Figure 2.

AOC 1 Investment Department

PRC noted a heavy solvent odor in the Investment Department (AOC 1) of Fansteel. PRC observed one 55-gallon container of TCA, and two 55-gallon containers of isopropyl alcohol, the contents of which were identified by Fansteel employees. All three of these containers were open and were located just below ventilation ductwork and vents which force air across the open containers (see Photograph No. 17). The facility representative indicated that the containers remain open when not in use.

Ethyl silicate is also used in this department in several open process tanks. Ethyl silicate has a permissible exposure limit of 10 ppm. Its odor threshold is 85 ppm (Genium 1989).

Also in the department were several large fans used to cool the area. AOC 1 is not included in the facility's operating air permits. IEPA has investigated emission of VOCs from ethyl silicate and determined that the emission is within regulatory requirements (IEPA 1993b). According to the facility representative, occupational exposures have been investigated and are also within regulatory limits.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 11 SWMUs and 1 AOC at the Fansteel facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. The AOC is discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 3, located at the end of this section, summarizes the SWMUs and the AOC at the facility and the recommended further actions.

SWMU 1 **Waste Storage Area**

Conclusions: This unit consists of an asphalt covered parking lot. The asphalt is heavily cracked and unbermed. The potential for release to environmental media is summarized below.

Groundwater: The potential for release is moderate. The unit manages liquid hazardous wastes which, if spilled, could enter the groundwater through the cracked asphalt.

Surface Water: The potential for release is moderate. Liquid hazardous wastes could enter the storm sewer located in the center of the unit if spilled.

Air: The potential for release is low.

On-Site Soils: The potential for release is high. Releases of hazardous waste and caustic sludge could contaminate on-site soil through the heavily cracked asphalt.

Recommendations: PRC recommends that the facility be required to store hazardous wastes in an area which has adequate secondary containment, although this is not a RCRA

requirement. PRC bases this recommendation on its observtions and on the numerous compliance inspections which have noted poor housekeeping of the area. The facility should also be required to manage the caustic sludge as a hazardous waste while it is on site if it exhibits the characteristic of corrosivity. Landfill (SWMU 8) wastes under SWMU 1 should be investigated along with the on-going investigation of SWMU 8.

SWMU 2 **Wax CAA**

Conclusions: This unit is located indoors on concrete and manages nonhazardous used wax. The potential for release to all environmental media is low because the unit manages nonhazardous waste which is solid at room temperature.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 3 **Nonhazardous Waste Accumulation Areas**

Conclusions: This unit consists of various-sized containers which accumulate broken molds, caustic sludge, metal filings and scrap, and slag. The potential for release to all environmental media is low because the containers manage nonhazardous waste, are maintained indoors in good condition, and are on concrete.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 4 **Dumpster**

Conclusions: This unit consists of a open dumpster located outdoors which manages general refuse, baghouse dust, and broken molds. The potential for release to all environmental media is low because this unit manages nonhazardous waste.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 5 **Baghouses**

Conclusions: This unit consists of four permitted baghouses which are located outdoors on concrete. The potential for release to all environmental media is low because the unit is operated under a permit, manages nonhazardous waste, and is maintained in good condition.

Recommendations: PRC recommends release controls be added to control dust emissions during the emptying of the baghouses.

SWMU 6 **Spent Acid CAA**

Conclusions: This unit is located indoors and manages nonhazardous spent acid on a periodic basis. The potential for release to all environmental media is low because the unit manages nonhazardous liquid waste in an area where there are no floor drains.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 7 **Former SI**

Conclusions: This unit consists of a 40-foot by 100-foot by 6-foot deep SI which was RCRA-closed in 1985. The unit managed nonhazardous wastes, but hazardous constituents were discharged into it. The potential for release to environmental media is summarized below.

Past releases to groundwater, surface water, and on-site soils have been documented. Because the unit is located outdoors and the documented releases were for VOC contamination, a past release to air was also possible, although not documented.

Recommendations: PRC recommends that ongoing investigations of this unit and the Landfill (SWMU 8) continue under the direction of IEPA.

SWMU 8 **Landfill**

Conclusions: This unit occupies approximately 0.5 acre and contains from 0 to 12 feet of fill material. The unit is currently covered by a synthetic tarp. The potential for release to environmental media is summarized below.

Groundwater: Groundwater contamination has been documented. Because contaminated fill material still remains in this unit, the potential for further release to shallow, perched groundwater exists.

Surface Water: Surface water contamination from this unit has not been documented. The potential for a future release is low because the unit is now covered.

Air: The potential for release is low. Releases to air have not been documented. The potential for release is low because the unit is now covered.

On-Site Soils: On-site soil contamination has been documented and the potential for migration of contaminants remains high as long as the fill material exists.

Recommendations: PRC recommends that the covering and ongoing investigations of this unit and the Former SI (SWMU 7) continue under the direction of IEPA.

SWMU 9 **Temporary Storage Tanks**

Conclusions: This unit consisted of four 10000-gallon portable storage tanks which were used from June 1984 to 1986 to store wastewater. The unit consisted of a

portable tank to hold alkaline effluent. The potential for release to all environmental media is low because the unit no longer exists.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 10 **Former Hazardous Waste CAA**

Conclusions: This unit was identified when a 1991 compliance evaluation inspection found that hazardous wastes were being stored for greater than 90 days. The potential for release to all environmental media is low because the unit no longer exists and when it was active it managed waste indoors on concrete.

Recommendations: PRC recommends that the area be investigated to determine the need for RCRA closure.

SWMU 11 **Neutralization Sump**

Conclusions: This unit consists of a permitted pretreatment system used to neutralize alkaline effluent. The potential for release to groundwater, air, and on-site soils is low because the unit is located indoors and does not manage volatile contaminants. The potential for release to surface water is moderate because the unit has a history of compliance problems. It discharges to the Village of Addison sewer system which discharges to Salt Creek.

Recommendations: PRC recommends that IEPA and the Village of Addison continue to monitor the discharges to determine compliance with regulations.

AOC 1 **Investment Department**

Conclusions: This unit was identified as an AOC because a heavy solvent odor was detected during the inspection. The unit contained open process tanks and containers that contained solvents. The potential for release to groundwater, surface

water, and on-site soils is low because the area is located indoors and has concrete floors. The potential for release to air is moderate. Several solvents are used in this area in open containers or process tanks.

Recommendations: PRC recommends that IEPA continue to monitor this unit for compliance with air emission standards.

TABLE 3

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
1. Waste Storage Area	1949 to present	None	Require facility to have secondary containment for hazardous wastes and investigate the sludge layer under this unit with on-going monitoring of SWMU 8.
2. Wax Container Accumulation Area (CAA)	1949 to present	None	No further action
3. Nonhazardous Waste Accumulation Area	1949 to present	None	No further action
4. Dumpster	Unknown to present	None	No further action
5. Baghouses	1977 to present	None	Institute release controls
6. Spent Acid CAA	1987 to present	None	No further action
7. Former SI	1949 to 1986	On-site soil and surface water releases	Continue ongoing investigation
8. Landfill	1949 to 1984	On-site soil and groundwater releases	Continue ongoing investigation
9. Temporary Storage Tanks	1984 to 1986	None	No further action
10. Former Hazardous Waste CAA	Unknown to 1991	None	Investigate need for RCRA closure
11. Neutralization Sump	1986 to present	Noncompliance with NPDES permit	Compliance monitoring

TABLE 3

SWMU AND AOC SUMMARY (Continued)

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
1. Investment Department	1949 to present	Possible release detected during PA/VSI	Investigate for occupational exposure and inclusion on operating air permits

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APPENDIX A

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

(12 Pages)

VISUAL SITE INSPECTION SUMMARY

Fansteel-Escast
21 Church Street
Addison, Illinois 60101
ILD 000 672 139

Date:	November 19, 1993
Primary Facility Representative:	Joe Taylor, Casting Foreman
Representative Telephone No.:	708/543-6800
Additional Facility Representatives:	Fred Dix, Plant Manager
Inspection Team:	Judith Wagner, PRC Environmental Management, Inc. (PRC) David Berestka, PRC
Photographer:	David Berestka, PRC
Weather Conditions:	Cloudy, light drizzle, 35 to 40 °F, windy
Summary of Activities:	The visual site inspection (VSI) began at 9:30 a.m. with an introductory meeting. The inspection team explained the purpose of the VSI and the agenda for the visit. Facility representatives then discussed the facility's past and current operations, solid wastes generated, and release history. Facility representatives provided the inspection team with copies of requested documents. The VSI tour began at 10:30 a.m. PRC began the facility tour in the molding and assembly department. PRC observed the Spent Acid Container Accumulation Area (CAA) (SWMU 6) in the shipping and receiving department. PRC then inspected the Investment Department (AOC 1) where the Former Hazardous Waste CAA (SWMU 10) was located. Several hoppers of the Nonhazardous Waste Accumulation Areas (SWMU 3) were observed in this area. PRC observed the autoclave area and the Wax CAA (SWMU 2) associated with it. Next, PRC inspected the casting department where slag is generated. PRC observed the Finishing Department where the Kolene machine, the Neutralization Sump (SWMU 11), and numerous small hoppers of SWMU 3 are located. PRC then went outdoors to observe the Dumpster (SWMU 4), the Baghouses (SWMU 5), the UST locations, the Waste Storage Area (SWMU 1), the Former Surface Impoundment (SWMU 7), and the Landfill (SWMU 8). The location of the

Temporary Storage Tanks (SWMU 9) could not be identified by the facility representative.

The tour concluded at noon, after which the inspection team held an exit meeting with facility representatives. The VSI was completed and the inspection team left the facility at 2:00 p.m.

Photograph No. 1 Location: SWMU 1
Orientation: Northwest Date: 11/19/93
Description: Containers of metal filings and scrap with monitoring well caps and a storm sewer in background. Note the storm sewer drain, surrounded by water, in the background. Two monitoring wells are also visible.

Photograph No. 2 Location: SWMU 1
Orientation: Northwest Date: 11/19/93
Description: Tarp-covered dumpster of caustic sludge labeled for corrosives

Photograph No. 3 Location: SWMU 1
Orientation: South Date: 11/19/93
Description: Drums of waste oil

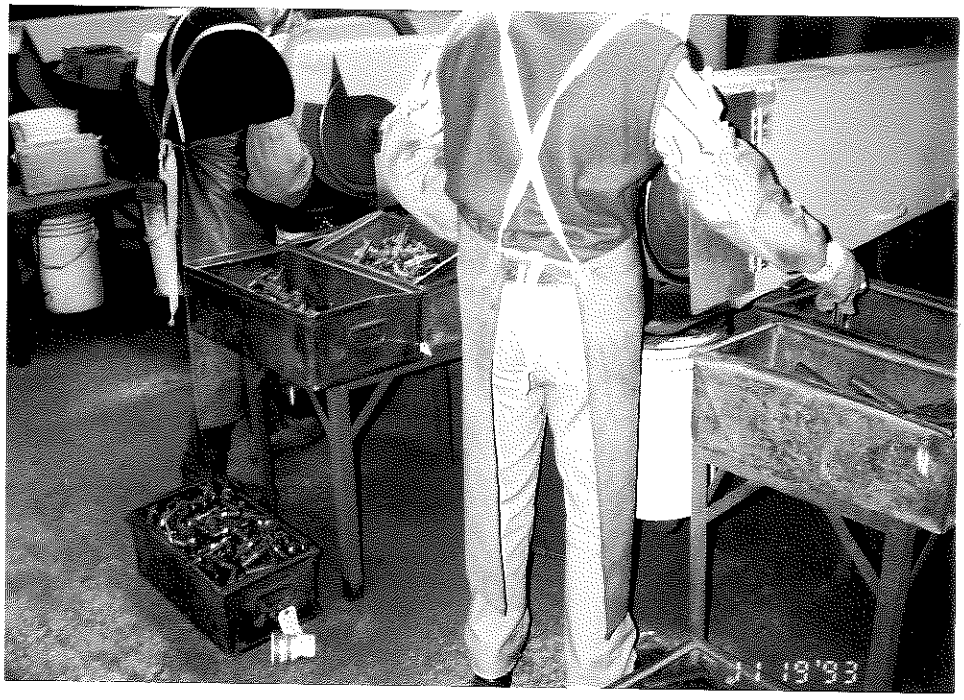
Photograph No. 4 Location: SWMU 1
Orientation: Northeast Date: 11/19/93
Description: Deteriorating drums of soil cuttings surrounded by wooden pallets and other debris

Photograph No. 5 Location: SWMU 1
Orientation: North Date: 11/19/93
Description: Deteriorating drums of soil cuttings surrounded by wooden pallets

Photograph No. 6 Location: SWMU 1
Orientation: Southeast Date: 11/19/93
Description: Plastic and cardboard containers of used wax maintained on pallets

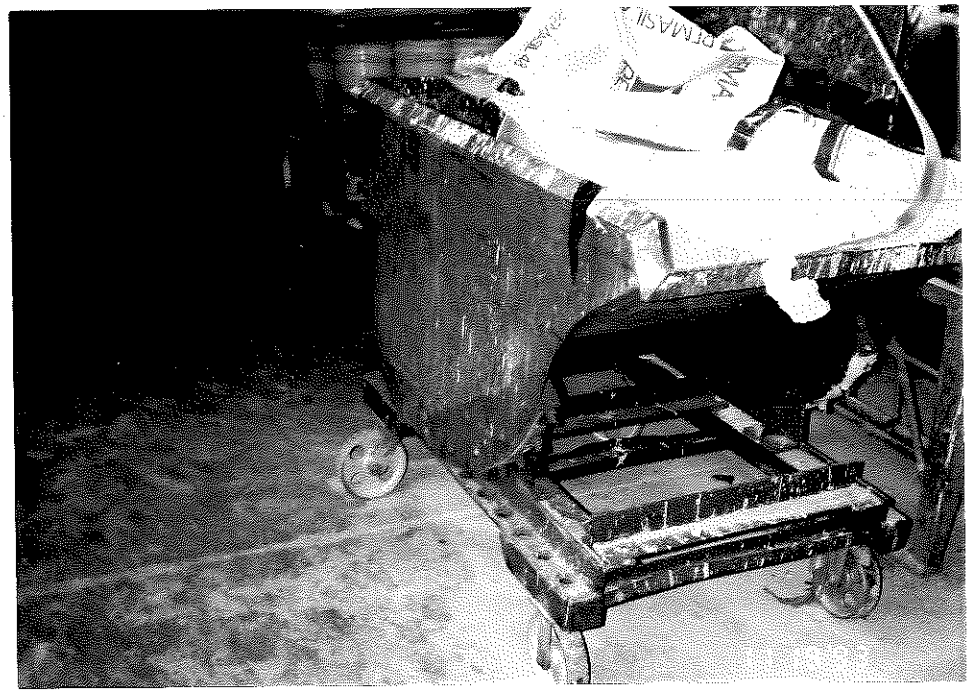
Photograph No. 7
Orientation: West
Location: SWMU 2
Date: 11/19/93
Description: Five-gallon accumulation pail for used wax; note the pipe on the right and wax on the floor

Photograph No. 8
Orientation: Downward
Location: SWMU 3
Date: 11/19/93
Description: Drum to accumulate nonhazardous slag



Photograph No. 9
Orientation: West
Description: White, 5-gallon pails for accumulating metal filings

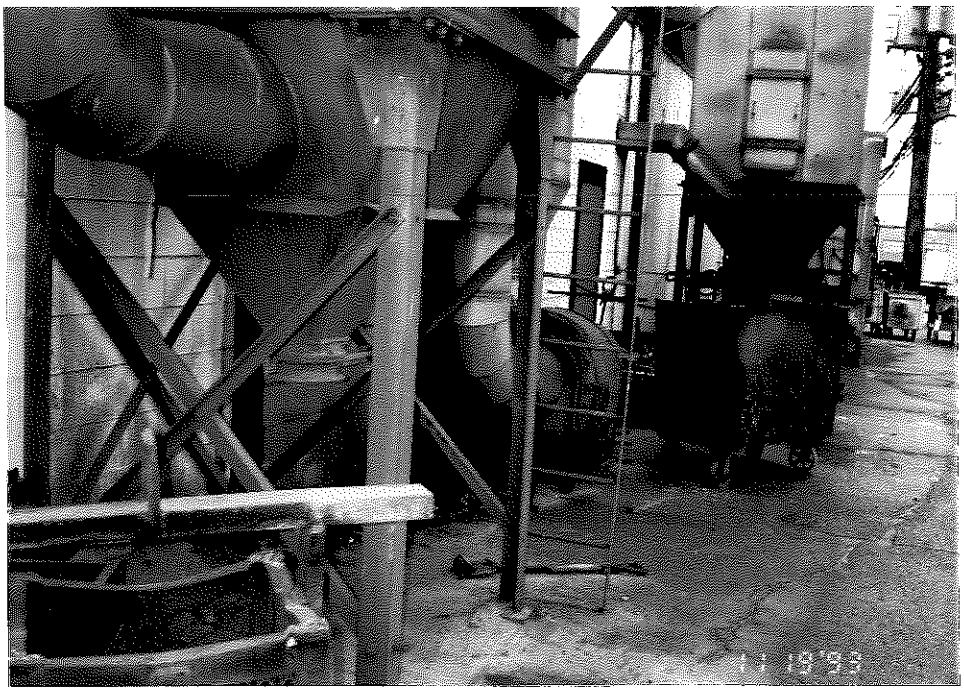
Location: SWMU 3
Date: 11/19/93



Photograph No. 10
Orientation: North
Description: Accumulation container for nonhazardous waste.

Location: SWMU 3
Date: 11/19/93

Photograph No. 11 Location: SWMU 4
Orientation: South Date: 11/19/93
Description: Dumpster containing general refuse and broken molds



Photograph No. 12 Location: SWMU 5
Orientation: Northwest Date: 11/19/93
Description: Baghouses located on the east side of the facility

Photograph No. 13 Location: SWMU 5
Orientation: West Date: 11/19/93
Description: Baghouses on the south side of the facility with dust on the pavement

Photograph No. 14 Location: SWMU 6
Orientation: South Date: 11/19/93
Description: Area of shipping department where spent acid is managed. The process tank which holds the acid is located behind the cardboard boxes.

Photograph No. 15 Location: SWMU 7
Orientation: Southeast Date: 11/19/93
Description: South wall of surface impoundment; bottom covered with cattails and broken molds

Photograph No. 16 Location: SWMU 8
Orientation: South Date: 11/19/93
Description: Tarp covered landfill with eastern edge of SWMU 7 visible in upper right corner. Monitoring well with the highest VOC concentration is visible near the center of the photograph.

Photograph No. 17 Location: SWMU 10 and AOC 1
Orientation: North Date: 11/19/93
Description: General area where, in the past, hazardous wastes were stored for greater than 90 days. The open containers are now process units. Note the ductwork above the open containers.

Photograph No. 18 Location: SWMU 11
Orientation: South Date: 11/19/93
Description: Neutralization sump next to the Kolene machine. Discharge to the sump is through a pipe located behind the Kolene machine and is not visible in the photograph. A container of caustic sludge is visible and is considered in this report to be part of SWMU 3.

Photograph No. 19 Location: USTs in SWMU 1
Orientation: North Date: 11/19/93
Description: Manhole covers for underground storage tanks (UST). Cover in background is for the isopropyl alcohol tank. Cover in foreground is for one of the ethyl silicate tanks.

Photograph No. 20 Location: USTs in SWMU 1
Orientation: West Date: 11/19/93
Description: Manhole covers to USTs. Cover on right is the unused, filled tank. Cover on the left if for one of the ethyl silicate tanks.

APPENDIX B

VISUAL SITE INSPECTION FIELD NOTES

(19 Pages)

Nov 19, '93

Fansteel-Escast
Addison, IL
ON-SITE 9:30 am

Met with Fred Dix

Facility Rep
Joe Taylor, Casting Foreman

Weather: Overcast, drizzly
~45°

Waste Streams:
2 parts wastes x 30 gal
WD Naphtha —

DLW

of production uses
~~of production uses~~ DLW
90% ~~of production process~~ DLW
TCA, Iso alcohol &
methylene chloride
- Waste drummed
→ one drum each every 3 months
~~Safety Kleen~~ DLW
drums stored in back
parking lot, NO SAA
Generation - ~~ten drums~~

FREON - discontinued
2-2.5 years ago
stored in dip area
5-6 drums / month
- used to clean wax
clusters

TCA D001, F002, F003
Iso alc. —
M.C. —

DLW

Fansteel - Escast

Review of process -

Slurry - flour, alcohol,
- Water base
- sand = stucco

Acetone - no know use (mixed w/ Freon per CEI report)

Wax waste -
recycled by
Yates Manufacturing
35th Street
Chicago, IL
Stored next to autoclave
3,000# off-site every month JW JW

Fansteel - Escast via

Caustic sludge = Kokegue process
store in back parking lot in ~~Harper~~ Hopper?
- used to clean metal parts after shake out
- shipped to Ohio
Brush - Wellman
Quantity - _____
Hooper Size -

Ceramic waste
to BFI landfill
- from shake out process
Dumpster - on-site
mixed with all garbage (lunch room + office waste) JW

Fansteel - Escast
Ceramic -
Picked up 2x per week

Compactor - for paper

Metal fillings -
from finishing operation
to metal hopper
Recycled by -
A Dubek Metal
processing in
Lemont, IL
- hopper once every
3 weeks
- Size ____

* Also, scrap alloy to this company JLW

(Dubek)

Waste Oil
Drums in back
parking lot
- Safety Kleen
- on going process
- from changing of
machine oil

Baghouse Dust
- added to hopper
that holds waste
ceramic
- bag emptied once
per week
- generated at jet
blaster (after shake
out)

JLW

Nov 19, 1993

Process

Ceramic shake out
to ↳ jet blasting
to ↳ Caustic cleaner
to ↳ finishing

⇒ Process has remained the same almost forever

Products

80% low carbon steel
10% stainless steel
10% mix of brass, bronze, ~~copper~~ few, nickle based products

→ no lead, chrome, beryllium

JW

Fansteel - Escast
Beryllium - discontinued ~ 1980

Soluble Core Wax

leached from wax mold -
⇒ need more info ⇐
1% of product uses this
- collected in drum

Misc:

Number of Employees: 80
2 shifts w/ 2 men on 3rd shifts

Security: electronic in building, fence around back parking lot

Fansteel - Escast

Equipment -
Electrical
Boiler - natural gas

JLW
~~100~~

USTs - 4 with 3 in use. One UST filled with sand * Raw material only

① 8,000 gal for "Tech sol" Alcohol
② 6,000 gal Ethyl silicate
③ 8,000 gal Isopropyl alcohol
④ Capacity unknown - on UST filled with sand formerly held ethyl silicate

JLW

On - or above ground material tank - for product/raw
6,000 gal colloidal silica

Chillers - closed loop systems

Closed UST - closed ~3 years ago - filled by Fansteel employees; Tested for leakage first → did not leak

Leak testing on others?
Unknown

JLW

Fansteel - Es cast

10:30 a.m. facility inspection

Molding Dept. by injection

Laboratory - for testing of slurry

Shipping area -
soluble core wax
acid bath (HCl)
only used about
every 2 months
- pumped by Fansteel
from ~~dip tank~~ new dip
bath to drums

JW

Gen Rate: about 20 drums per year

Drums maintained near tank - none on site now

Photo #1 south

Investing area
Heavy alcohol odor
3 drums: 1 TCA + alcohol
open! 1 alcohol
1 alcohol
for dipping clusters -
etching/cleaning
*see note pg 76

JW

Photo #2 N.E.
hopper for floor
sweeping waste

Autoclave Room —
wax being "baked"
out of molds = wax
drips into 7 gal pail
pail emptied into
plastic hopper. Hopper
has valve at bottom.
Wax on floor.

Casting area —
Slag collection - from
clean out of melting
pots

Kolene Machine —
Small hopper
photo #3

Nuetralization sump
- drain to pit

Knockout + cut off area

Baghouses - photo
Dumpster - photo

Metal filling — 3 stations
w/ 5 gal pails

Fansteel Escast

11/19/93

Inspection Area

Tool Room
S.S - P.Washers

Photo
Concrete block walls

→ Note: incoming air vents right above open drums in investing area

Outside - Back parking lot
Photos of UST manholes

large dumpster - blue/green cover
Caustic soda
15 yd3

Dumpster - scrap alloy
(Red) 10 yd3

9 Drums - parts w/mold, ceramic attached

Haz Waste Storage Area

Sign on fence

yellow spray paint the work area

heavily cracked asphalt

No berm, slopes to soil, ditch along fence, tree line

HW

Fansteel Escast

11/19/93

Haz Waste storage –
next to wells

SI – gate on East
small lock

9 Drums waste oil
by ammonia tank

Alloy or overhead pay
on ground UST
fiberglass

Noon – break for lunch
Return 1:15pm

KW

Safety Kleen
– Elgin ILD 000 805 911
23 gal D001, D018, D039
1500 East Villa St
Elgin 60120
Required by Village:
monthly analysis
24 hour composite
Fat, oil & grease
of water from Kolene
washing * NaOH
neutralized on-site w/
H_2SO_4

Baghouse dust –
Copy of analytical
results.

KW

Fansteel Escast

Caustic
- 1 ton / month
Now Peabody Coal Company
Belleville, IL 62221
- used to neutralize acid run-off
Contact:
Larry Reuss - Peabody
address: Ten Executive Woods

Four baghouse -
2 - rotoblast
1 - jet blast uses steel shot
1 - cut off

Baghouses
4 x 55 gals per week

JLW

BFI - call Jim Myczek
708-345-7050
Melrose Park, IL

Waste Oil - Now
Illinois Recovery
Systems, Inc.
Wheeling IL
UST reports - not/none
available

Illinois Recover
708-297-0255
probably fuel blended
About 1 drum/month

UST closure - 1988
(filled in)

KA

Fansteel-Escast

Landfill - tarp covered area

Litigation between Escast + Beatrice, Inc. (Foods)

Current status is unknown

Currently - TCA, FDR + N.C. Solvent Systems International

ILD984483 2006 Sw

Transporter

to: Petro Chem Processing, Inc.

Detroit MI

MID 980 615 298

JLW

Freon/Acetone Solvent Systems recycled waste on-site in past

2:00 pm Off-site

Note:

During facility inspection, rep. showed area of fence where break in occurred. Scrap metal was stolen.

JLW

(104)

FANSTEEL

ESCAST ADDISON, IL

11/19/93

JUDY WAGNER } PRC
DAVID BERESTKA

Joe M. Taylor - Casting Supervisor

Fred Dix

Cloudy, Cold, 30°F windy

Mr Dix was busy and had Mr. Taylor assist PRC in conducting the inspection. Mr. Dix would be available if necessary.

DJB
11/19/93

(105)

Waste Stream

2 pet naptha (D001, ~~D018 and D039~~) stet DJB 11/19/93
parts washers
serviced by S-K DJB 11/19/93
30 gallons each
S-K, Elgin, ILD 000805711

TCA - still used trans
sometimes S-K ILD 984 908 202

Freon - discontinued use of this 2.5 yrs ago

stored in die area

5-6 drums/month

used to wash the clusters

Solvent Systems International, Inc. ILD 984 832 006
Nortru Inc. MID 021 087 275 DJB 11/19/93
Petro Chem Detroit MID 980 615 298

Slurry is made of
flour + alcohol
+ sand stucco.

Acetone - previously
generated - Joe not
sure why.

Waste wax - collecting a
Yates manufacturing container
reclaims the wax
every 2-3 months
3000 lbs/month.

Kolene
Caustic sludge - used
to clean metal parts
small hopper next to
production area. When
The small hopper is
full, it is filled into
1 ton/month Peabody Coal Co.

X neutralize mix with
Belleville neutralize
Southern, IL

RJO 11/1/83

a large hopper
out back

broken
Ceramic molds - BFI
every other day - mixed
with general refuse

metal filings
metal hopper
Dubek Metal Processing
Lemont, IL
1 hopper/3 week

used oil stored in
back in drums. in back
parking lot. ~~S-K~~
changing machine oils
ILLINOIS Recovery Systems, Inc.
Wheeling IL, Analyzed for Cl only
Fuel blender 1 drum/month

RJO 11/1/83

(108)

Dust Collector, bag house

dust waste goes into

a ceramic mold hopper

emptied 1/week

jet blasting of

parts 1 drum/bag house each week

80% carbon steel

10-12% stainless

rest brass/bronze

cobalt

nickel

1986 - beryllium stopped

Soluble Core Wax

leaching of soluble core

wax 1% of process

collected in sink

pumped into drum

DD 11/12/93

(109)

Drum to Storage area

80 employees

2 shifts

No fuel oil tanks

No UST - wait

4 USTs

8000 gallons Isopropyl Alcohol

6000 gal

Ethyl Silicate

Back of building

sand (filled in place) 3yrs ago

TecSol 8,000 gall

all raw products

DD 11/12/93

(12)

(3) Autoclave Area. West
Wax drippings on floor

(4) Casting Area SE
Slag from steel crucibles
- no spills

(5) Kolene hopper South
Full hopper dump in large
hopper at back.
Elementary neutralization unit
below grating. Elementary
neutralization at Kolene
rinsewater only
NaOH spillage present

(6) General Refuse Roll-Off Box
South paper, trash &
broken molds disposed in
broken molds cover
ground.

DJB 11/18/93

(13)

(7) Baghouse dust Collectors
North. Some dust
on ground - from roto blast
+ ventilations

(8) More Baghouse dust collectors
West Some dust on ground

DJB 11/18/93 (9) Grinding + finishing
West scrap metal filings collected
in white 5-gallon buckets

(10) back to Wax cleaners
TCA + Alcohol dip tanks
(drums). Waste stored
here during 1991 CEI
also spills + open tops
next to air vents that
blow - in
Picture taken North

DJB 11/18/93

(114)

Get Coats ~ 4.

outside

(11) 2 USTs SW

West pipe next to building

Drum in photo empty

1 UST sand

1 UST Tecsol

(12) 2 more USTs NE

1 UST Isopropanol

1 UST ethyl Silicate

Other Various unused mtl is

pipe.

(13) Nothing here now. NW

1991 CET shows

caustic sludge stored here

Cracked asphalt

DJB 11/18/93

(115)

Drill

(14) Cuttings from NE

well installation - stacked

2 high. Pallets in area

Cracked concrete

(15) Scrap metal NW

drums of pricier metals

Scrap brass, bronze

Pallets

(16) Caustic sludge roll-off box

West Covered

(17) Scrap metal in drums

and Roll-off box

mostly steel NW

(18) ~~Fe~~ Liner covered South

Surface Impoundment

DJB 11/18/93

(116)

4 Month WASTE STORAGE

[D001, F002, F003]

only wastes - all covered
good condition of drums
no stains/odors

Joe says that some
scrap metal has been
stolen from the facility.
Someone cut a hole in the
fence. He shows PRC
the hole. It has been
repaired but it is still
visible. Also, a boundary
mon has been taken
in the woods on the
East side of the
facility

(117)

(19) Used Wax SE

drums + plastic 55 gal lamb
asphalt/concrete clean - but cracked

(20) Used oil storage
SW

(21) former surface
impoundment
SE

12:00 - off site lunch
1:05 - on site

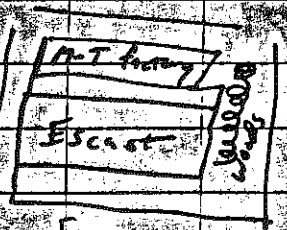
Joined by Fred Dix
to go thru waste
stream + check monitors
notes taken on p. 105-111
by filling in data
sheets

(118) (115)

1:45 Mr. Dir leaves for meeting

2:10 DST ended leave site

Drive around



storm water retention pond

11/19/93